DOCUMENT RESUME

ED 224 073 CS 504 057

AUTHOR Sullivan, Jayne E.; Rogers, Bruce G.
TITLE Listening Retention of Children as a Function of Mode of Presentation.
PUB DATE Apr 81
NOTE 12p.; Paper presented at the Annual Meeting of the American Educational Research Association (Los Angeles, CA, April 13-17, 1981).
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Educational Researchers; *Filmstrips; Grade 3; *Instructional Films; Learning Modalities; *Listening; Literature; Primary Education; *Reading Aloud to Others; *Retention (Psychology); *Teaching Methods

ABSTRACT

A study compared the listening retention of third grade pupils when a literature passage was presented via the teacher showing a film, showing a sound filmstrip, and reading from a book. The words and pictures in each presentation of a children's fantasy story were identical in each case. Subjects were 30 randomly selected pupils in each of the 20 third grade classes in a semirural public school system, for a total of 600 students. To separate the effect of the teacher from the treatment effect, each class of 30 was randomly divided into three groups of 10 before separately receiving the three treatments. At the conclusion of the three treatments, the listening retention test developed for the study was administered to all 30 pupils. Analysis of results showed no significant differential effects between the treatments. (JL)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED224073

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION
CENTER (ERIC)

This document has been reproduced as received from the person or organization originating it.
Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

Listening Retention of Children as a Function of Mode of Presentation

Jayne E. Sullivan

Public Schools, St. Mary's County, Maryland

Bruce G. Rogers

University of Northern Iowa

Paper presented at the annual meeting
of the American Educational Research Association,
Los Angeles, April, 1981

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Jayne E. Sullivan

Bruce G. Rogers

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

Running Head: Listening Retention

CS504057

Abstract

This study compared the listening retention of third-grade pupils who had been exposed to a literature passage via three modes of presentation. Within each of twenty classrooms, pupils were randomly assigned to three groups and the teacher then showed a film, showed a filmstrip, or read from a book. The words and pictures in each presentation were identical. A listening retention test was administered and the results showed no differences. After the statistical power of the analysis was examined, it was concluded that the three modes of presentation most likely did not produce differential effects upon the listening retention of the pupils.

Listening Retention of Children as a Function of Mode of Presentation

Since the ability to succeed in classroom learning is closely related to the understanding of the communicated message, teachers are continually exhorted in the professional literature to carefully consider the effectiveness of various methods of presentation. The instructor may communicate directly with the student or choose from a wide variety of media. In the teaching of literature in the elementary school, the teacher is particularly concerned with selecting a mode of communication which will help the students focus their attention upon the content and thus reduce the effects of distracting influences.

Although teaching literature to children has not been a major area of research in the past, investigators have examined several variables of interest. Kintsch and Kosminsky (1977) compared the amount of comprehension between listening and reading modes and found similar results under each. Stevenson and Siegel (1969) and Ruch and Levin (1977) found gains in knowledge following the use of media as a teaching aid. Examining listening retention after literature passages had been read, Sirota (1971) and Glenn (1980) found that well-planned and logically structured presentations were most effective.

Overall, the literature suggests that oral reading on the part of the teacher and the use of audio-visual media can affect listening retention, but it also suggests that further investigations should be conducted to compare alternative approaches.

One possible approach in this area is the testing of children's retention under different methods of presentation of the content. Toward that end, this study was designed with the purpose of comparing the listening retention of third-grade pupils when a literature passage was presented via the teacher showing a film, showing a sound filmstrip, and reading from a book.

Method

Materials

In order to implement the three methods of presentation, it was first necessary to select a children's literature book which was also available in equivalent forms as a film and filmstrip. The Red Carpet (Parkin, 1948), with its film and filmstrip (Western Woods Studios, 1955, 1957) met this criteria. The book was a children's fantasy story, with colored pictures on each page. For all three presentations, the script was identical, and the pictures in both the film and filmstrip were exact reproductions of those in the book (an illusion of motion in the film was created with camera movement). This selection had not been used in the schools selected for the study, nor had it appeared on television. In a pilot study, it was preferred over three others by student choice.

A listening retention test was developed by preparing a table of specifications over the characters and the plot, and constructing a set of multiple choice items in accordance therewith. The test was administered in a pilot study, and the resulting item analysis was used to revise the items. The final instrument contained 20 items and its reliability, as measured by the Kuder Richardson formula 20, was .76.

Subjects

Twenty third-grade teachers, in a semi-rural public school system, agreed to cooperate in the study. In each classroom, thirty pupils were randomly selected. Since pupils in the schools were not assigned by ability level, it was assumed that the students had been assigned to classes on an approximately random basis.

Procedure

Because it was considered essential to be able to separate the effect of the teacher from the treatment effect, the thirty pupils in each classroom were randomly divided into three groups of ten subjects each. The teacher of the class then took the groups, one at a time and in random order, to a separate room where she either showed the film, showed the filmstrip, or read the book. At the conclusion of the three treatments, the listening retention test was administered to all thirty pupils. The subjects received individual booklets which they read while listening to a recording of the questions and options.

Results

The study was conceived of as a randomized block design in which the teacher's classroom was used as the blocking variable. It was analyzed as a mixed model, with treatments being considered as fixed and classrooms as random (Dayton, 1970, pp. 168-69). The classroom was used as a blocking variable because it was expected to be a significant source of variation in the dependent variable.

A summary of the analysis of variance is shown in Table 1. As was expected, the classroom effect was statistically significant. However, the treatment effect was far from showing statistical significance; thus it was

deemed inadvisable to interpret the differences between the observed means as anything except random fluxuations. The interaction term was also non-significant.

Insert Table 1 about here

Since the subjects were drawn from intact classes, it is also appropriate to analyze the data using group mean as the unit of analysis. The means and standard deviations are shown in Table 2 and the analysis of variance results are shown in Table 3. The results are consistent with the previous analysis in showing no significant effect between treatments.

Insert Tables 2 and 3 about here

Statistical Power Analysis

Whenever non-significant results are obtained in a study, it is desirable to be able to conclude that the treatments were not substantially different in their effects. This conclusion can be challenged by a competing explanation, namely, that the treatments differed in their effects, but that the experimental design lacked sufficient power to detect this difference. For the first analysis above, a sample size of 200 and the conventional values of .05 for the significance level and .60 for the power were used to enter a power table (Cohen, 1977, pp. 56, 314). The tabled effect size of .13 (interpolated) was then divided by the square root of the test reliability of .76 (Subkoviak and Levin, 1977, p. 49). (Note: The across-groups reliability was deemed appropriate for this application only because the treatment effect was

negligible.) The resulting value of .15 reflects a small effect size, when classified using the conventions suggested by Cohen (1977, p. 285).

For an analysis using group mean as the unit of analysis, Barcikowski (1980, p. 19,20) has presented the following formulas:

$$f^* = f\sqrt{n_g}\ \sqrt{1 + (n_g - 1)R}$$

$$R = (MSB - MSW) / (MSB + (n_g - 1)MSW)$$

where f^* = effect size using grouped means

f = effect size treating the data as ungrouped

n_g = group size

R = intraclass correlation coefficient

MSB = mean square between groups

MSW = mean square within groups

From the data in Table 1, the intraclass correlation coefficient was estimated to be .34, and using the effect size reported above, f^* was estimated to be .23. Again using Cohen's conventions, this effect size would be classified in the upper part of the range of small effect sizes.

Both of these power analyses suggest that if even a relatively small treatment effect had existed, then either of the analysis procedures described above would have had at least an 80 percent chance of detecting it at the .05 level. Since no effect was detected, it seems reasonable to conclude that the treatments did not produce substantially different outcomes in terms of listening comprehension.

Discussion and Conclusion

This study presents initial evidence of the type of relationship between well-prepared modes of presentation and student's listening retention. The results imply that no important differences were discernable between the use of a film, filmstrip, or the teacher reading a book.

Certain limitations need to be kept in mind when interpreting these results. First, only rural third-grade pupils were used; second, only one literature passage was used in the treatment; and third, only cognitive outcomes were considered. With these restrictions in mind, the non-significant results could receive several interpretations. But it appears to the authors that, because of the statistically powerful design and analysis, it can be inferred with reasonable confidence that the different media presentations did not produce substantial cognitive differences among the pupils.

Some teachers read aloud to their classes to stimulate the students' imaginations to weave mental images. Other teachers use films and filmstrips to insure a consistency of presentation to all students. The results of this study appear to imply that student achievement will not be adversly affected if teachers chose any of these modes when the presentations are prepared and delivered in a professional manner. However, additional research will be needed to extend the generality of these findings.

References

Barcikowski, R. Statistical power with group mean as the unit of analysis. Athens: Ohio Univ., 1980, ERIC No. ED 191910.

Cohen, J. Statistical power analysis for the behavioral sciences (Rev. ed.). N.Y.: Academic Press. 1977.

Dayton, C. M. The design of educational experiments. N.Y.: McGraw Hill, 1970.

Glenn, C. Relationship between story content and structure. Journal of Educational Psychology, 1980, 72, 550-560.

Kintsch, W. and Kozminsky, E. Summarizing stories after reading and listening. Journal of Educational Psychology, 1977, 69, 491-499.

Parkin, R. The red carpet. New York: Macmillan, 1948.

Ruch, M. and Levin, J. Pictorial organization versus verbal repetition of children's prose: evidence for processing differences. AV Communication Review, 1977, 25, 269-280.

Sirota, B. The effect of a planned literature program of daily oral reading of fifth grade children (Doctoral dissertation, New York University, 1971). Diss.Abs. Int., 1971, 32, 2320A.

Stevenson, H. W. and Siegel, A. Effects of instructions and age on retention of filmed content. Journal of Educational Psychology, 1969, 60, 71-74.

Subkoviak, M. J. and Levin, J. R. Fallibility of measurement and the power of a statistical test. Journal of Educational Measurement, 1977, 14, 47-52.

Weston Woods Studios (Producer). The red carpet. Weston, Conn: Weston Woods Studios. Film, 1955. Filmstrip, 1957.

Table 1

Analysis of Variance

of Listening Retention Scores

Source	df	MS	F	p
Classroom	19	80.77	6.06	<.005
Treatment	2	21.22	1.36	.25<p<.50
Interaction	38	15.85	1.17	.10<p<.25
Within Cells	540	13.34		

Table 2

Means and Standard Deviations

Using Group Mean as the Unit of Analysis[1]

Group	N	Mean	SD
Film	20	11.18	1.48
Filmstrip	20	10.75	2.09
Reading	20	10.54	2.01

[1] Each unit represents the average score from a group of 10 subjects.

Table 3

Analysis of Variance

Using Group Mean as the Unit of Analysis

Source	df	MS	F	p
Treatment	2	2.13	0.60	>.50
Within Cells	57	3.53		